

# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

[FIFTH SERIES.]

No. 84. DECEMBER 1884.

---

XLV.—*Description of an Impregnated Uterus and of the Uterine Ova of Echidna hystrix.* By Sir RICHARD OWEN, K.C.B., F.R.S., &c.

[Plate XIII.]

IN the 'Transactions of the Royal Society' for 1865 a description is given of the marsupial pouches of the *Echidna hystrix* and of a "mammary foetus" found in one of the pouches; they form a pair, and differ not only in this respect, but in the absence of a nipple, from the single mammary pouch of the Marsupialia. Each pouch is small: the one from which the young *Echidna*, not more than 1 inch 10 lines in length, was taken seemed capable only of receiving the head and fore limbs<sup>z</sup>, the rest of the body being covered and concealed by the hair of the under surface of the parent's body.

As this specimen was captured on the 12th of August, 1864, I communicated to my friend George Frederic Bennett, Esq., Corresponding Member of the Zoological Society of London, then resident at Toowoomba, Queensland, that the months of July, August, and September would be most favourable for the capture of impregnated females of the spiny Monotreme.

\* 'Anatomy of Vertebrates,' vol. iii. p. 767, fig. 603.

In 1880 I was favoured by receiving a female *Echidna*, killed August 30, 1879, in which the left uterus contained three ova; also a female *Echidna*, killed September 14, 1879, in which one ovum was contained in the right uterus. The female organs of both specimens are subjects, figs. 1 and 3, of pl. xxxix. Phil. Trans. 1880, enlarged views being given of the most advanced ovum (the natural size being 6 millim. in diameter) in figs. 2, 4, and 5 of the same plate. A magnified view of a portion of the outer tunic ("hyalinion") of the ovum is given in fig. 3. This tunic was thin, smooth, without trace of vascularity, and the sole indication of commencing development was a linear indentation of the vitelline membrane of the single ovum.

Continuing the correspondence with my coadjutor in this quest, I subsequently received the female organs, preserved in alcohol, of an *Echidna*, captured in the month of September, 1882, in the vicinity of Toowoomba. The increased size of both uteri led me to hope for more decided testimony on the moot question of the oviparity or ovo-viviparity of the Monotremes.

The right uterus was laid open and a collapsed ovum was exposed; an accomplished artist was engaged to make the drawing (Pl. XIII. fig. 1) before proceeding further with the quest. This being completed I laid open the left uterus by a similar longitudinal incision, and exposed a still more collapsed ovum (*ib.* fig. 2, *g'*).

In both uteri the absence of any connexion of the ova with the uterine walls was shown by their floating freely as moved by the feeble wave of the menstruum in which the dissection was made. The vitelline mass, exposed by the section of the outer tunic, had assumed a similar elongate figure (*h'*, fig. 2).

The flattened ovum, *f*, of the right uterus was then removed, and the vitelline mass exposed, as in fig. 3. A linear indent of the vitelline membrane, *h*, seemed to repeat that noted in the smaller ovum of the specimen previously (1880) described. The chief change, besides increase of size, was the increased thickness of the smooth tough outer tunic ("chorion" or "hyalinion"), in which as little trace of vascularity was present as in the ovum at the earlier period of its uterine existence. I concluded therefore that the undeveloped ovum would have been excluded as such; and the confirmation of this view is given in an Australian periodical with which I was subsequently favoured.

In the 'South Australian Register' of September 8, 1884, the Director of the South Australian Museum, Adelaide, J. W.

Haacke, Ph.D., records the fact that on the 25th August in that year he found an egg "in the mammary pouch (not the uterus) of a living *Echidna hystrix*, which he had received about the 3rd of the same month from Kangaroo Island. The egg was unfortunately decomposed inside; but the circumstance of the mother having been worried by being captured and kept in captivity easily accounts for this. On Tuesday, September 2nd, Dr. Haacke laid a number of specimens on the table, including an egg found in the pouch of a female *Echidna*, in support of the theory that the *Echidna*, though a milk-giving animal, lays eggs, which are hatched in the pouch."

Since the foregoing paragraphs were in type, I have been favoured with a letter (dated Sept. 16, 1884) from my friend Dr. Bennett, F.L.S., of Sydney, New South Wales, enclosing the subjoined "cutting" from the 'Sydney Herald' newspaper:—

"*Embryology.*

"*To the Editor of the 'Herald.'*"

"SIR,—I send you the following information, believing that the fact will interest some of your readers. The embryology of the Monotremata *Ornithorhynchus* and *Echidna*, commonly known as platypus and porcupine, is, up to the present time, absolutely unknown. Considering the unique structure of these animals, it was probable that a knowledge of their development would yield important results. This is the case in a greater degree than I had anticipated. Both forms are oviparous. The amount of food-yolk in the egg is very large, and consequently there is only a partial *segmentum* (meroblastic type). The egg is laid at an age equal to a 30-hour-old chick, and is enclosed in a strong, flexible, white shell; it measures about three fourths of an inch in the long axis and half an inch in the short.

"*Ornithorhynchus* produces two such eggs at a birth, while *Echidna* has only a single one. The former places her eggs in the nest at the end of one of the burrows, the latter carries her egg in a ventral pouch. I have already obtained most of the stages in the development, and hope to get a sufficient number during the present breeding-season. I take this opportunity of asking your readers to help me to get a larger number of the embryos of marsupial animals than I at present possess. Since my arrival last October I have collected many

embryos of several marsupial genera, including native bears and opossums, and some kangaroo and wallabies. I must get many more before I shall have enough to work out all the problems of the development. I shall be deeply indebted to any one who will inform me in time of an approaching kangaroo drive. It matters not to me whether the drive be in New South Wales, Victoria, Queensland, or South Australia, so long as the place be fairly accessible. A drive where the kangaroos are yarded would be preferable. An answer, giving an estimate of the number of animals likely to be obtained, addressed to my headquarters, Board of Health Office, Sydney, will reach me.

“Yours, &c.,

W. H. CALDWELL.”

“In Camp, Burnett River,  
Queensland, 1884.”

I can only add an expression of thankfulness for having lived to see solved, and mainly by Mr. Caldwell's persevering researches, a biological problem which I have sought to determine since the date of a paper on the *Ornithorhynchus* in the 'Philosophical Transactions,' 1832, p. 517.

#### EXPLANATION OF PLATE XIII.

- Fig. 1.* Anterior or ventral view of the female organs, urinary bladder, and cloaca (nat. size) of *Echidna hystrix*; the right uterus laid open, and exposing a collapsed ovum.
- Fig. 2.* The same parts, with both uteri laid open.  
(In both figures: *a*, ovarium; *b*, abdominal orifice of oviduct; *b'*, *c*, uterus; *d*, urogenital canal or cloaca; *e*, urinary bladder; *f*, uterine ovum; *g*, hyalining or outer tunic; *h*, vitelline mass.)
- Fig. 3.* Ovum from the right uterus, with the vitelline or undeveloped embryonal mass exposed.

#### XLVI.—On the Coleopterous Genus *Macrotoma*.

By CHARLES O. WATERHOUSE.

HAVING recently had occasion to examine some specimens of the genus *Macrotoma* and to consult various Catalogues referring to this group of Longicorns, I was surprised in all cases to find *Macrotoma Hayesii*, Hope, placed as a synonym of *M. serripes*, Fabr., the Munich Catalogue giving *M. Hayesii* as the male, and *M. serripes* as the female. I do not know how this very great error originated; but it is difficult to conceive how any one who had compared the figures given